Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole # 40-03-05

Borehole Information

Farm : S	**Tank :** S-103	**Site Number :** 299-W23-53
N-Coord : 36,186	**W-Coord :** 75,827	**TOC Elevation :** 663.48
Water Level, ft :	**Date Drilled :** 3/31/1952	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 150	

Borehole Notes:
According to the driller's records, the casing was perforated between 40 and 100 ft with five holes per foot but was not grouted.

The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 04/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 06/06/1996	**Logging Engineer:** Mike Widdop
Start Depth, ft.: 148.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 85.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 06/07/1996	**Logging Engineer:** Widdop/Spatz
Start Depth, ft.: 86.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 0.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : S.D. Barry

Data Processing Reference : P-GJPO-1787 Analysis Date : 03/10/1997

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137 and Co-60 were detected around this borehole. The presence of Cs-137 was measured continuously from the ground surface to about 2.5 ft and intermittently from 48 to 67.5 ft. The maximum calculated Cs-137 concentration was 23.8 pCi/g at the ground surface. However, the concentrations calculated at the surface are considered apparent concentrations, because the source-to-detector geometries at this location differ from the source-to-detector geometries during calibration. The Cs-137 concentrations in the rest of the borehole were less than 1 pCi/g. Co-60 contamination was measured almost continuously from about 51 to 72.5 ft with a maximum concentration of 1.1 pCi/g at 54.5 ft.

The KUT concentration values increase at about 74 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank S-103.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.